

conditions, the burden of providing electricity and pressurized air still falls on the main engines.

One approach to reducing the parasitic losses of the main engines is to combine an auxiliary power unit and an environmental control system into one system and have the auxiliary power unit's compressor continuously provide pressurized air to the environmental control system. Such systems are known in the prior art. Although these systems eliminate the parasitic loss due to the extraction of pressurized air from the main engines, they still require shaft horsepower from the main engines to drive electrical generators. Yet another known approach is to combine an auxiliary power unit and an environmental control system into one system and have the auxiliary power unit drive an electric generator. In such systems however, the auxiliary power unit consumes fuel. Therefore, though the fuel consumption of the main engines is reduced, the overall fuel consumption of the aircraft is not necessarily reduced.

It is also known in the prior art to provide an environmental control system that provides conditioned air to an aircraft's cabin as well as supplying all of the aircraft's electrical needs without an increase of fuel consumption. Such a system is shown in U.S. Patent No. 5,442,905 to Claeys et al. Despite the existence of such a system, there still remains a need for an environmental control system that can provide both conditioned air and electricity to an aircraft without an increase in fuel consumption.

#### SUMMARY OF THE INVENTION

It is an object of the present invention to provide an electric power and cooling system for an aircraft which provides conditioned air to an aircraft's cabin as well as supplying all